



**Oregon State**  
**University**

Climate Science Unit  
College of Earth, Ocean, and Atmospheric Sciences

Mr. Brian Stone, Acting Director  
National Science Foundation  
2415 Eisenhower Avenue  
Alexandria, VA 22314

## **Response to Dear Colleague Letter: NSF Intent to Restructure Critical Weather Infrastructure**

Wednesday, March 11, 2026

As university-based members of the scientific community in Earth system research, we have directly seen the benefits of NCAR's unique scientific leadership and the synergies that its current configuration supports. These strengths come from two significant pillars, which together are unlike any other similar research center in the world. We are convinced that removing components of NCAR poses serious risks to these two strengths.

The first key strength is the connections among the various NCAR activities. Improving weather forecasts through research has saved countless lives. Deepening our understanding of the atmosphere requires both modeling improvements and continuous observations. NCAR conducts weather observations and research that support best-in-class weather model development. Components of the earth system models used for long-term climate system research benefit from, and also help inform and improve, the weather models, both of which live in a family of models that span timescales and components and benefits from synergies among them, much as auto manufacturers achieve efficiencies by using the same chassis for different vehicles. Separating the weather modeling and climate modeling or discontinuing either would weaken both. NCAR's centralized, long-term model management enables scientific efficiency: shared engineering expertise, stable releases, consistent documentation, community support, and continuity across student cohorts and research projects. This structure reduces duplication across universities and lowers the barrier to entry for new users while improving rigor and reproducibility.

The second is the community modeling approach. Many nations operate national lab-scale research facilities that develop numerical models, but NCAR alone uses a community model approach in which researchers in universities and elsewhere come together to make intellectual contributions that would be impossible to match with a more divided or insular approach. CESM and the Polar Climate Working Group steward the Community Ice Code (CICE) which is the premier sea ice model used by most climate and ocean-ice forecasting models internationally. NCAR's stewardship of this community has ensured open discourse and software, allowing development of models that are globally recognized as state-of-the-art in sea ice modeling, for example.

This community modeling approach not only capitalizes on a much broader and deeper pool of expertise, it also creates a smoother pathway for applications to the private sector through open science / open source / open products.

These two key strengths point toward some responses to the specific questions posed in the Dear Colleague Letter.

NSF is seeking transformative and creative concepts that enable efficient and cost-effective operations, management and continued evolution of the following capabilities:

1. Atmospheric observational platforms

As noted above, we believe that removing these platforms from NCAR would significantly weaken the research and development capabilities made possible by the integration of atmospheric research and observations. Other responses to the DCL (e.g. by former NCAR directors) have noted the success of NCAR research in, for example, improving aircraft safety by better understanding turbulence. If, however, a decision is made to remove the observational platforms from NCAR, we wonder about adopting a model across the federal government to manage observational aircraft as a collective resource similarly to the way UNOLS manages the fleet of research vessels. A central office would plan the location and timing of observational campaigns, and users would apply for time and space on a campaign.

2. Cyber infrastructure and computing capabilities, including atmospheric and space weather modeling and forecasting research,

It's hard to see the benefit of having a third party manage NCAR's cyberinfrastructure, which is a vast resource not just for scientists at NCAR but for scientists from the >130 member institutions who use it to conduct their own science. The most straightforward way to save costs would be to reduce administration (unlikely given the added inefficiency of communication with a separate organization, and a small cost savings) or to reduce the amount spent on new hardware, operations, and maintenance, which would unavoidably hamper scientific productivity.

3. Training and development for students and community members on weather and space weather modeling and forecasting.

This is an extremely valuable and very low-cost function of NCAR and it's hard to see how any benefit would come of ending it or moving it to a separate organization. Access to NCAR scientists through both formal trainings (e.g., the CESM tutorial hosted each year at NCAR) is an amazing resource that helps broaden access to modeling capabilities for US scientists, increases the user base, and diversifies the uses and applications of the model.

Are there any areas in which NCAR activities or capabilities duplicate those of other government agencies, universities, or the private sector?

We are not aware of any duplication that could be eliminated without significantly detrimental effects; areas of apparent duplication are, on deeper inspection, unique strengths. For instance, NCAR's climate system model is one of four best-in-class climate models in the US (NOAA GFDL, NASA GISS, and DOE E3SM), but as is widely recognized for both weather predictions and climate modeling, it is essential to incorporate multiple models because each one on its own has limitations that are ameliorated by considering the differences. Read the National Weather Service's Forecast Discussion on any given day to see these benefits in action.

Are there other concepts for management and operations of NCAR activities that differ from the current model that NSF should consider?

We have no comment on internal NCAR organization. We urge however that any reorganization preserve the unique synergies achievable through the governance structure that involves the partner universities.

What should the performance objectives and metrics be for a restructured atmospheric research center?

Community engagement metrics; International engagement, uptake of NCAR model improvements by other groups, number of trainees and their subsequent publications, the breadth of university representation in collaborations with NCAR scientists, percentage of high-performance computing usage by scientists external to NCAR.

As faculty in the Climate Science unit at Oregon State University whose research has benefited from NCAR, we are grateful for the opportunity to weigh in on the future of NCAR.

Sincerely,

Philip Mote, PhD, Chair

Jennifer Hutchings, PhD

Andrea Allan, PhD

James Moum, PhD

Christo Buizert, PhD

Larry O'Neill, PhD, State Climatologist

Peter Clark, PhD, Member, US National Academy of Sciences

Mark Raleigh, PhD

Jennifer Engels, PhD

David Rupp, PhD

Erica Fleishman, PhD

Jim Thatcher, PhD

Amrapalli Granaik, PhD

Justin Wettstein, PhD

Andrea Jenney, PhD

Seth Zippel